

2. PHONEMES

There are twenty-two segmental phonemes in Bonggi:² seventeen consonants /t k ? b d g ϕ s dʒ m n ɲ ɳ l r w y/ and five vowels /i u e o a/. Stress is non-contrastive, but length is contrastive.

	Bilabial	Alveolar	Palato- alveolar	Palatal	Velar	Glottal
Vl. plosive		t			k	ʔ
Vd. plosive	b	d			g	
Fricative	ϕ	s				
Affricate			dʒ			
Nasal	m	n		ɲ	ŋ	
Lateral		l				
Flap		r				
Semivowel	w			y		

	Front	Central	Back
High	i		u
Mid	e		o
Low		a	

2.1 Description of the phonemes

2.1.1 Consonants

/t/	[t̚]	voiceless unreleased alveolar plosive; occurs word-finally: /mingat/ [ˈmɪŋgət̚] 'to chew betel nut' /kimuat/ [kʲiˈmʷũət̚] 'to ask'
	[t̪]	voiceless dental plosive; occurs before front vowels: /tilug/ [ˈt̪ilog] 'egg' /timbEtuid/ [t̪ɪmbəˈtuid̪] 'type of snake'
	[t]	voiceless alveolar plosive; occurs elsewhere: /datag/ [ˈdatəg] 'floor' /tolu/ [ˈtolu] 'three'
/k/	[k̚]	voiceless unreleased velar plosive; occurs word-finally: /louk/ [ˈloʊk̚] 'fish' /manuk/ [ˈmānɔ̃k̚] 'chicken'
	[kʲ]	voiceless palatalized velar plosive; occurs before front vowels: /kiou/ [kʲiˈoʊ] 'wood' /kiara/ [kʲiˈarə] 'to have'
	[kʷ]	voiceless labialized velar plosive; occurs before back vowels: /ku/ [kʷu] 'my' /korɪŋ/ [ˈkʷorɪŋ] 'dry'
	[h]	voiceless glottal fricative; occurs word-medially between vowels and word-initially in functors when the preceding word ends in a vowel or a glottal plosive: /mokon/ [ˈmʷɔ̃hɔ̃dn] 'to eat' /odu kina/ [ˈodu ˈhinɔ̃] 'earlier today' /nda? kai/ [ˈnda? haː] ~ [ˈnda? heː] 'not also'
	[k]	voiceless velar plosive; occurs elsewhere: /kEtaan/ [kəˈtaːdn] 'hold out' /kaaʔ/ [ˈkaːp] 'able'
/ʔ/	[ʔ]	glottal plosive; contrastive only word-finally: /moduʔ/ [ˈmʷɔ̃duʔ] 'far' /molaʔ/ [ˈmɔ̃ləʔ] 'to split open'

- /b/** [b^ʷ] voiced unreleased bilabial plosive; occurs word-finally:
/kEloub aka/ [kə^ʷlo^ʷb^ʷ 'ahə] 'do not fall'
- [β] voiced bilabial fricative; occurs word-medially between vowels:
/kabaʔ/ [kəβəʔ] 'crab'
/kibut/ [k^ʷiβut] 'large jar'
- [b^w] voiced labialized bilabial plosive; occurs before back vowels:
/buid/ [b^wuid] 'hill'
/boros/ [b^wɔɾɔs] 'noise'
- [b^ʰ] voiced bilabial plosive; occurs elsewhere:
/bituun/ [bi^ʰtu:dn] 'star'
- /d/** [d^ʰ] voiced unreleased alveolar plosive; occurs word-finally:
/loud/ [l^ʰo^ʷd^ʰ] 'sea'
- [ɖ] voiced dental plosive; occurs before front vowels:
/ɲondiʔ/ [ɲ^wɔ̃ndiʔ] 'to throw away'
/diaan/ [ɖi^ʰa:dn] 'me'
- [d] voiced alveolar plosive; occurs elsewhere:
/gibiin/ [g^ʷiβi:dn] 'afternoon'
/dain/ [dai^ʰdn] 'trail'
- /g/** [g^ʷ] voiced unreleased velar plosive; occurs word-finally:
/biag/ [b^ʰiəg^ʷ] 'full; satisfied'
- [g^ʷ] voiced palatalized velar plosive; occurs before front vowels:
/giban/ [g^ʷibəkɲ] 'left'
/boŋgi/ [b^ʰwɔŋg^ʷi] 'Bonggi'
- [g^w] voiced labialized velar plosive; occurs before back vowels:
/gulaʔ/ [g^wuləʔ] 'sugar'
/goun/ [g^wo^ʷdn] 'smoke'
- [g] voiced velar plosive; occurs elsewhere:
/gambar/ [gambar] 'picture'
/ogas/ [əgəs] 'rice'
- /ɸ/** [p^ʰ] voiceless unreleased bilabial plosive; occurs word-finally:
/kiraɸ/ [k^ʷiɾəp^ʰ] 'eyelash'
- [p] voiceless bilabial plosive; occurs in homorganic consonant clusters:
/kElimɸeit dāmār/ [kə^ʷim^ʰpeit^ʰ 'dāmār] 'a type of viper'
/mɸanu/ [m^ʰpanū] 'to walk'

	[ɸ]	voiceless bilabial fricative; occurs elsewhere: ³		
	/tuɸi/	[¹ tuɸi]		'squirrel'
	/ɸintuʔ/	[¹ ɸmtuʔ]		'door'
	/ɸEgɸuŋa/	[ɸəg'ɸuŋə]		'when it was finished'
/s/	[ɕ]	voiceless dental central fricative; occurs before front vowels:		
	/simbeit/	[ɕim ¹ be ¹ t ¹]		'loincloth'
	/iɸus ina/	[¹ iɸuɕ 'inə]		'that tail'
	[s]	voiceless alveolar central fricative; occurs elsewhere:		
	/saraɸ/	[¹ sarəp ¹]		'early'
	/sumuka/	[su ¹ mūhə]		'to vomit'
/dʒ/	[dʒ]	voiced palato-alveolar affricate; occurs syllable-initially: ⁴		
	/dʒimbatan/	[dʒim ¹ batədn]		'pier'
	/badʒuʔ/	[¹ badʒuʔ]		'shirt'
/m/	[m]	voiced bilabial syllabic nasal; occurs word-initially before homorganic consonants:		
	/mmonsuʔ/	[m ¹ m ^w ɔ̃nsuʔ]		'to bathe someone'
	[bm]	voiced bilabial pre-ploded nasal; occurs word-finally in non-nasal syllables:		
	/gandum/	[¹ gandobm]		'corn'
	[m ^w]	voiced labialized bilabial nasal; occurs before back vowels:		
	/mukat/	[¹ m ^w ūhət ¹]		'to fish with net'
	[m]	voiced bilabial nasal; occurs elsewhere:		
	/mien/	[¹ mīɛ̃n]		'aunt'
	onom/	[¹ ɔ̃nɔ̃m]		'six'
/n/	[ŋ]	voiced dental nasal; occurs before front vowels:		
	/tuni/	[¹ tuŋi]		'body'
	/nimbak/	[¹ ŋimbək ¹]		'to shoot'

³There are three exceptions in the distribution of the allophones of /ɸ/. The word /ɸut/ [¹put¹] 'an empty milk tin used as a measurement for rice' is never pronounced with a [ɸ]. This is a borrowing. Likewise /ɸin/ [¹pidn¹] 'pin' is borrowed and not pronounced with a [ɸ]. There is one apparently indigenous word which contains [p] word-medially between vowels, /kuɸuun/ [k^wu¹pu:dn] 'early evening (about 7 p.m.)'. No explanation is offered for this anomaly. Names also vary with respect to [p] vs. [ɸ]. Names fall into the category of what Pike (1947:142-3) calls over-differentiated phonemes. Pike (1947:143) suggests that over-differentiated phonemes could be handled as extra-systemic phonemes.

The allophone [ɸ] occurs much more frequently than the allophone [p]. When distribution and frequency are given more weight than pattern congruity the voiceless bilabial must be the fricative /ɸ/ and not the plosive */p/. Jacobson (1979:141) points out that the strong phone in the South Mindanaoan family is [ɸ] or [f].

⁴/dʒimbatan/ is pronounced [g¹im¹batədn] by some speakers. This is further evidence that /dʒ/ has phonemic status only in loan words. English *engine* is realized as [¹ŋg¹ɪdn]. Malay *rajin* 'hard working' is realized as [¹rag¹ɪdn]. /dʒ/ is a recent addition to the Bonggi phonemic system.

- [ŋ] voiced alveolar syllabic nasal; occurs word-initially before alveolar and palato-alveolar consonants:
 /nnulaʔ/ [ŋ'nūləʔ] 'to criticize'
 /ndʒaam/ [ŋ'dʒa:bm] 'to spend time talking'
- [dn] voiced alveolar pre-ploded nasal; occurs word-finally in non-nasal syllables:
 /tibasən/ [tɪ'βasədn] 'to cut'
- [n] voiced alveolar nasal; occurs elsewhere:
 /miŋin/ ['mɪŋɻm] 'to want'
 /bansuk/ ['bansokʔ] 'posts for house'
- /ɲ/ [ɲ] voiced palatal nasal; occurs word-initially:
 /ɲu/ [ɲū] 'your (plural)'
 /ɲawa/ [ɲāwəʔ] 'soul'
- /ŋ/ [ɲʏ] voiced palatalized velar nasal; occurs before front vowels:
 /ɲindakad/ [ɲʏ'n'dahədʔ] 'to climb'
 /ɲiraʔ/ [ɲʏ'rəʔ] 'to teach'
- [ŋʷ] voiced labialized velar nasal; occurs before back vowels:
 /ɲuludʒum/ [ɲʷū'ludʒobm] 'to lie'
 /ɲokol/ [ɲʷəʔhəl] 'to bite'
- [ŋ] voiced velar syllabic nasal; occurs word-initially before homorganic consonants:
 /ŋgait/ [ŋ'gaɪtʔ] 'to wait'
- [kŋ] voiced velar pre-ploded nasal; occurs word-finally in non-nasal syllables:
 /bElatun/ [bə'latokŋ] 'beans'
- [ŋ] voiced velar nasal; occurs elsewhere:
 /ŋali/ ['ŋāli] 'to dig'
 /tiŋaən/ [tɪ'ŋā:ŋ] 'scorpion'
- /l/ [l] voiced dental lateral; occurs before front vowels:
 /bali/ ['bali] 'house'
 /katal idun ku/ ['kata] 'idokŋ kʷu] 'my nose itches'
- [l] voiced alveolar lateral; occurs elsewhere:
 /kaʔal/ ['kaʔal] 'boat'
 /louk/ ['loʷkʔ] 'fish'
- /r/ [r] voiced alveolar flap:
 /ruub/ ['ru:b] 'tide'
 /kErobi/ [kə'roβi] ~ [kə'reβi] 'last night'
 /baar/ ['ba:r] 'true; sure'
- /w/ [w] voiced rounded labiovelar semivowel:
 /waluʔ/ ['waluʔ] 'eight'
 /ɲawa/ [ɲāwəʔ] 'soul'

/y/	[y]	voiced unrounded palatal semivowel; occurs syllable-initially:	
	/kuɸuyuʔ/	[k ^w u ^h ɸuyuʔ]	'small cloth bag'
	/minyən/	['mĩnyɛ̃n]	'son/daughter-in-law'

2.1.2 Vowels

The classification of Bonggi vowels is based on the function of vowels in different types of syllables. Syllables consist of an optional onset and a rime (=core), and the rime consists of a nucleus (=peak) and an optional margin (=coda) (Hyman 1985:1).

There are two types of syllables: light and heavy (cf. sec. 3). Bonggi treats a syllable whose rime has a short vowel as light and a syllable whose rime has a long vowel or diphthong as heavy, regardless of whether the syllable is closed by a consonant or not (cf. Hyman 1985:5).

Heavy syllables only occur word-finally, are always stressed, and are restricted to one per word (cf. sec. 2.4). Words of two or more syllables which lack heavy syllables are always stressed on the penultimate syllable.

Five vowels contrast in light, stressed syllables:

/i/	/mi.liʔ/	['mĩjiʔ]	'to chose'
/e/	/me.liʔ/	['mɛrikʔ]	'again (past)'
/a/	/ma.liʔ/	['mãrikʔ]	'again'
/o/	/mo.liʔ/	['mõji]	'to buy'
/u/	/mu.liʔ/	['mũjiʔ]	'to return home'

Four vowels contrast in final, light syllables:

/i/	/ma.ti/	['mãti]	'die'
/a/	/ma.ta/	['mãta]	'eye'
/o/	/mo.bo/	['mõβɔ]	'to carry on back'
/u/	/ba.tu/	['batu]	'rock'

Three vowels contrast in pre-stressed, light syllables, the contrast between non-high vowels being neutralized as [ə]:

/u/	/su.mu.ak/	[su ^h mũãkʔ]	'enter'
/i/	/si.mu.ak/	[si ^h mũãkʔ]	'entered'
	/si.ma.kit/	[si ^h mãhitʔ]	'became sick'
/E/	/sE.ma.kit/	[sə ^h mãhitʔ]	'become sick'

The archiphoneme /E/ represents the neutralization of non-high vowels in some pre-stressed syllables. When roots are suffixed, the underlying vowel is known, e.g.:

/a.ta.dan/	[ə ^h tadãdn]	'to send (PF)'	root: /atad/
/o.go.ton/	[ə ^h gɔtɔdn]	'to hold (PF)'	root: /ogot/

However, there is no way, on internal grounds, to know in unaffixed cases what the underlying vowel is. The archiphoneme avoids the arbitrary choice of one of the non-high vowels (cf. Sampson 1980:108), e.g.:

/tE.li.ŋa/	[tə'liŋə]	'ear'
/tE.naak/	[tə'nã:kʔ]	'person whose first child died outside womb'

There are two types of heavy syllables. The first type contains long vowels. Four vowels contrast in long, heavy syllables, e.g.:

/i/	/kiid/	[kʲi:dʔ]	'see'	(cf. /ki.dan/	[kʲidədn]	'see (PF)')
/a/	/di.aa/	[dʲi'a:]	'land'	(cf. /di.a/	[dʲia]	'there')
/u/	/φuun/	[φu:dn]	'tree'	(cf. /φun/	[φudn]	'also'
/o/	/ŋE.loos/	[ŋə'lɔ:s]	'clear underbrush'	(cf. /lo.son/	[lɔsədn]	'clear underbrush (PF)')

The second type of heavy syllable contains diphthongs. The peak of sonority is on the first vowel, which is slightly lengthened, and the second vowel serves as an offglide. The slight length or half-length is not marked in the phonetic data because stressed syllables are always longer than unstressed syllables, e.g.:

/ai/	/kE.rai/	[kə'ra ¹]	'work'
/au/	/tau/	[tə ^u]	'know'
/oi/	/oid/	[o ⁱ dʔ]	'boat'
/ou/	/ki.ou/	[kʲi'o ^u]	'wood'
/ei/	/keit/	[kʲe ⁱ tʔ]	'hook'

Certain vowel combinations are always realized as diphthongs, e.g. /ai/ as in /dain/ [daⁱdn] 'trail', but others never are, e.g. /ia/ as in /biag/ [biəgʔ] 'full; satisfied' (cf. sec. 2.4).

Bonggi words do not have penultimate long vowels or penultimate diphthongs. The vowels in heavy syllables are shortened when the root is suffixed. This applies to long vowels (cf. above /kiid/ vs. /ki.dan/; /ŋE.loos/ vs. /lo.son/) and to diphthongs, e.g.:

/nouk/	[nɔ ^u kʔ]	'to fetch water (AF)'
/so.koʔ/	[sɔhɔʔ]	'fetch it! (PF)'
/ŋeit/	[ŋe ⁱ tʔ]	'to harvest fruit with hook (AF)'
/ke.tin/	[kʲe ⁱ tdn]	'to harvest fruit with hook (PF)'

Thus, five vowels contrast in stressed, light syllables and nine contrast in heavy syllables, as shown in the following table:

SYLLABLES

	Pre-stressed	Stressed	Post-stressed
light	i	i	i
	u	u	u
	E	e	
		a	a
		o	o
heavy		ii	
		uu	
		aa	
		oo	
		ai	
		au	
		oi	
		ou	
	ei		

The long vowels and diphthongs are grouped together because of their similar behaviour. That is, they form heavy syllables which draw stress, and they both are shortened when suffixed.

Most of the languages of Sabah and Palawan have a four-vowel system (cf. this volume; cf. also Thiessen 1977). However, there are languages in the area with five vowels (e.g. Kimaragang (Kroeger, this volume), Sibutu Sama (Allison 1979:79)), six vowels (e.g. Ida'an (Moody, this volume)), and seven vowels (e.g. Pangutaran Sama (Walton 1979:202)).

There is good evidence of surface contrast between five vowels, but the distribution of these vowels is skewed. This is due to an underlying/historical four-vowel system which is still exhibited by most other languages of the immediate area.

The vowel /e/ occurs very infrequently and only in stressed syllables. It probably obtained phonemic status recently. /oi/ is a source of /ei/ (cf. Kroeger (this volume); cf. also Forschner (1978)). There are regional differences on Banggi Island between the use of [ei] and [oi] in a small set of words, e.g.:

	Limbuak Darat	NW part of island	Gloss
/soid/	[^h so ^h id ^h]	[^h ʃe ^h id ^h]	'inside'
/toin/	[^h to ^h id ^h n]	[^h ʃe ^h id ^h n]	'jungle'
/sin.doin/	[ʃɪn ^h do ^h id ^h n]	[ʃɪn ^h ʃe ^h id ^h n]	'finger nail'
/bo.si/	[^h b ^w oʃi]	[^h b ^w oʃi]	'metal'
/oid/	[^h oid ^h]	[^h oid ^h]	'boat'

[e] alternates with [i] in two words in Limbuak Darat, e.g. [i^hi^h] ~ [e^hi^h] 'we (exclusive)' and [i^hisi] ~ [e^hesi] ~ [osi] 'who'.

The phoneme /o/ occurs in the final syllable of a word only when it is long (forming the nucleus of a heavy syllable), or when the penultimate syllable nucleus is also /o/, as in the following forms:

/mo.dop/	[^h mɔ̃dɔp ^h]	'to sleep'
/mo.lok/	[^h mɔ̃lɔk ^h]	'afraid'
/mo.got/	[^h mɔ̃g ^w ɔt ^h]	'to hold'
/bo.bo/	[^h bɔ̃ɔ̃]	'to carry on back'
/mo.kon/	[^h mɔ̃hɔdn]	'to eat'
/kE.so.bon/	[kə ^h sõɔ̃dn]	'day after tomorrow'

- /i/ [ɪ] semi-high front unrounded vowel; occurs in closed syllables except when the vowel is geminate or when syllable coda is /ʔ/; if syllable coda is /ʔ/, and syllable onset is /l/ and the preceding syllable contains a high vowel /i/ or /u/ then [ɪ] occurs (otherwise [i] occurs); also occurs in open stressed syllables preceding /r/:
- | | | |
|---------|-------------------------------------|------------------|
| /induʔ/ | [^h ɪnduʔ] | 'mother' |
| /muliʔ/ | [^h m ^w ɪliʔ] | 'to return home' |
| /kiri/ | [^h k ^y iri] | 'eyebrow' |
- [i] high front unrounded vowel; occurs elsewhere:
- | | | |
|-----------|--------------------------|--------------------------|
| /aliʔ/ | [^h aliʔ] | 'male (term of address)' |
| /sinaɸaŋ/ | [ʃi ^h nãɸəkŋ] | 'rifle' |
- /u/ [o] mid back rounded vowel; occurs in final, unstressed closed syllables when syllable coda is a velar or bilabial consonant:
- | | | |
|---------|-------------------------------------|-----------|
| /manuk/ | [^h mãnɔk ^h] | 'chicken' |
| /tilug/ | [^h tilɔg ^h] | 'egg' |
| /tutuɸ/ | [^h tutɔp ^h] | 'top' |
- [u] semi-high back rounded vowel; occurs in closed syllables when syllable coda is /t/ or /d/ and vowel is not geminate:
- | | | |
|---------|---|----------|
| /ɸɔput/ | [^h g ^w ɔɸut ^h] | 'bushes' |
|---------|---|----------|
- [u] high back rounded vowel; occurs elsewhere:
- | | | |
|--------|-----------------------|---------------|
| /oduʔ/ | [^h oduʔ] | 'grandmother' |
| /ɸuun/ | [^h ɸu:dn] | 'tree' |
- /e/ [ɛ] lower-mid front unrounded vowel; occurs in closed syllables except when syllable onset is a velar consonant:
- | | | |
|----------|-------------------------|--------|
| /mien/ | [^h mĩɛn] | 'aunt' |
| /tembar/ | [^h tɛmbəkŋ] | 'deer' |
- [ɛ] mid front unrounded vowel; occurs elsewhere:
- | | | |
|----------|--|-------------|
| /kembit/ | [^h k ^y ɛmbit ^h] | 'purse' |
| /mEleid/ | [mɔ̃ ^h lɛ ^h d ^h] | 'long time' |
| /genʒi/ | [^h g ^y ɛŋʒi ^h] | 'promise' |
- /o/ [ɔ] mid back rounded vowel; occurs before high vowels /i/ and /u/:
- | | | |
|----------|---|-----------|
| /kEloub/ | [kə ^h lo ^u b ^h] | 'to fall' |
|----------|---|-----------|

/oid/	['o ^h d ^h]	'boat'
/odu/	['odu]	'day'
/bongɪ/	['b ^w oŋg ^y i]	'Bonggi'

[ə] mid central unrounded vowel; occurs before /a/; also occurs in pre-stressed syllables in roots which have been suffixed:

/koraʔ/	['kəɾəʔ]	'monkey'
/ʔoroon/	[ʔə ^h ro:dn]	'to tell (PF)'

[ɔ] lower-mid back rounded vowel; occurs elsewhere:

/diao/	[d ^h i ^h ɔ:]	'over there'
/modoʔ/	['m ^w ɔdɔp ^h]	'to sleep'
/took/	['to:k ^h]	'ripe'

/a/ [ə] mid central unrounded vowel; occurs in unstressed syllables except when syllable coda is a liquid; also occurs in pre-stressed syllables in roots which have been suffixed:

/ndaʔ/	['ndəʔ]	'no'
/anak/	['anək ^h]	'child'
/na/	[nə]	(definite article)
/balasan/	[bə ^h lasədn]	'return/vengeance (PF)'

[a] low central unrounded vowel; occurs elsewhere:

/naan/	['nā:n]	'to carry on shoulder'
/katal/	['katal]	'to itch'
/angar/	['angar]	'leaf used in chewing betel nut'

/E/ [ə] mid central unrounded vowel; occurs in pre-stressed syllables:

/tEliŋa/	[tə ^h liŋə]	'ear'
/bErosi/	[bə ^h roʃi]	'paddle'

PHONOLOGICAL DESCRIPTIONS
of
SABAH LANGUAGES

Studies from ten languages:

Bonggi
Ida'an
Kadazan/Dusun
Kalabuan
Kimaragang
Labuk-Kinabatangan Kadazan
Lotud
Tagal
Tatana'
Tombonuwo

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